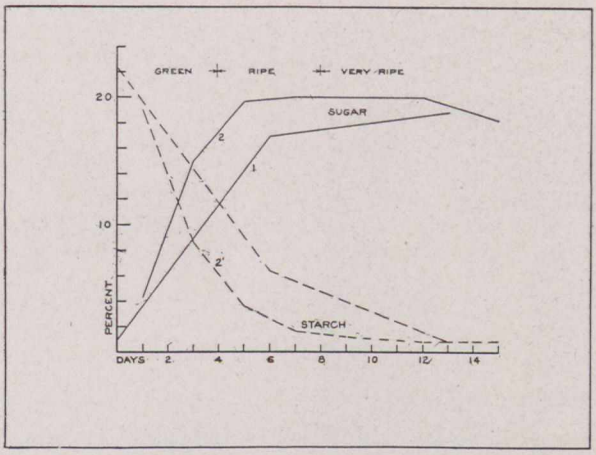

Curves to show the decrease in the amount of starch (the broken lines) and corresponding increase in the amount of sugars (continuous lines) based upon two different sets of analyses made by Dr. H. C. Gore, United States Bureau of Chemistry

soluble granules in the cells (Fig. 4). Inasmuch as, at the present, the peel is a waste, the figures for the pulp only are of immediate interest. According to the most recent results, in Gore's paper already cited, about 22 per cent of the unripe pulp is starch. When in this condition the fruit may be cooked, thus rendering the starch digestible, as in the case of other vegetables, such as the potato. The starch content, however, changes rapidly during the course of ripening. At the end of five to seven days, from the fully unripe condition, the amount falls to between 6 and 7 per cent and in six to eight days more to the small amount of somewhat less than 1 per cent. This disappearance of starch (see Fig. 3) is due to the action of a chemical agent, a ferment,[1] which changes it into sugar, a change, as one sees, which alters the net food value only a little (due to respiration), but which renders the fruit more readily digestible. The amount of sugar therefore alters inversely, the amount in the unripe fruit, about 1 per cent, climbing to about 19 per cent (one-third of which is cane-sugar), in the fully ripe condition. In the curves which I show herewith these changes are shown by the two solid lines, showing the increase in sugar, and by the two broken lines showing the decrease in starch during fifteen days after the beginning of ripening. These indicate very clearly that the greater amounts of change take place during the first six to eight days. Thereafter, the amounts of such substance remain nearly the same. The loss of sugar during the last few days, shown by the dropping of the curve (No. 2), is the result of respiration, for which oxygen is needed. From these results it is seen that the full food value of the banana, both as to quantity and kind, is to be had at the earliest on the seventh day approximately after the ripening process has begun, assuming of course that it is understood that this takes place at 68 degrees.

Other food substances occur in minor amount only. Pectose, resulting from the alteration of the cell

[1] Tallarico (in the paper cited) identifies five different ferments, but even this number probably does not include all.